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(54) **AC AND DC BIPOLAR VOLTAGE SOURCE USING QUANTIZED PULSES**

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(58) **Field of Search** 341/133, 143, 341/171

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(57) **ABSTRACT**

A Josephson quantizer is driven by a sinusoidal microwave generator whose output is combined with a digital two-level code representing a desired waveform. The result is to produce a bipolar drive signal of increased frequency and a bipolar Josephson output with voltage increased significantly. Output voltage is developed according to the relationship $V = Nnmf_s/K_J$, where N is the number of junctions, n is the Josephson junction constant voltage step number, f_s is the sampling frequency, m is an integer multiple of the sampling frequency and is ≥ 2 , and K_J is the Josephson constant. The digital code generator receives the output of an improved modulator which incorporates a three-level to two-level transformation on the output of a standard three-level modulator in one embodiment. In a second embodiment, a modified two-level modulator produces a bit sequence where the polarity of the next bit is allowed to change only if there is an odd number of consecutive bits of the same polarity.

21 Claims, 6 Drawing Sheets

